

# PATENT SPECIFICATION

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## (54) IMPROVEMENTS IN OR RELATING TO DENTAL COMPOSITIONS

(71) We, LABORATOIRES H. VILLETTE S.A., of 5 rue Paul Barruel, Paris 15, France, a French Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a new preparation designed for the care and hygiene of teeth and in particular to a tooth-paste which may have properties of antidecay action and protection of the enamel of the teeth.

Compositions of this sort which can be used as tooth-pastes have for a long time been described and marketed, and generally contain, as well as the normal ingredients of, for example, abrasive agent, surface active agent, thickening agent, colorant or whitening agent, and flavouring constituents, active agents of at least one compound of fluorine which is soluble in water and a phosphate, as well as an antiseptic agent for removing undesirable bacteria.

Amongst fluoride and/or mineral phosphate compounds sodium monofluorophosphate which is a good anti-decay agent, has been recommended most often, whilst various compounds have been used as non-poisonous antiseptics, such as anti-bacteria macrolides, for example salts of tylosine and desmycosine, guanidine derivatives, and quaternary ammonium salt. The applicants have commercialised a tooth-paste containing, as an antiseptic, sodium acetarsol, which has good anti-bacteria effect.

The creams or pastes known until now often have a slightly bitter taste in the mouth, and success in masking this taste by additional flavouring and/or sweetening substances has not always been achieved.

It has now been found that this disadvantage can be avoided and a composition can be obtained which does not have any bitterness, by adding to the normal ingredients of the paste a mixture in predetermined proportions,

of sodium chloride and water soluble alkaline salts of saccharinic and glycyrrhizic acids.

Accordingly, the invention provides an aqueous dentifrice, comprising a fluoride or alkaline fluorophosphate anti-caries agent, an abrasive agent chosen from metallic oxides and alkaline earth metal phosphates, and a mixture of sodium chloride and water-soluble alkaline salts of saccharinic and glycyrrhizic acids.

The compositions according to the invention, characterised by this addition of non-bitter ingredients, include the normal constituents of a cream or a tooth-paste, and in particular these may be:

a) An anti-decay agent based on a water soluble fluoride compound such as an alkali fluoride; a metal fluoride, such as Fe, Cu, Ni; a fluorosilicate; a fluoroborate; or preferably an alkali fluorophosphate such as  $\text{Na}_2\text{PO}_3\text{F}$ .

b) A polishing or abrasive agent, such as calcium phosphate or pyrophosphate, for example, dicalcium phosphate, either anhydrous or in the hydrated or stabilised forms; an alkaline metaphosphate silicon or aluminium; a metallic silicate such as aluminium silicate or kaolin; or a pulverised plastics material such as a phenoplast, an aminoplast, a polyamide, polyvinyl chloride or a polycarbonate.

c) A thickening, binding or gelling agent chosen generally from the class of natural products such as starches, alginates, pectins, or gum tragacanth, or from synthetic products such as cellulose ethers or esters, polyacrylates, or polyvinylpyrrolidone.

d) An agent for protecting the composition against humidity and also to render it oily. For this effect, glycerine, paraffin oil, sorbitol, or polyalkyleneglycol can be used.

e) A surface active compound chosen from the group of ionic products, non-ionic products or amphoteric products. Compounds which are soluble in water are particularly suitable, such as fatty alcohol sulphates; glycerides of higher fatty acid; alkyl sulphates such as sodium laurylsulphate; or alkaline alkyl arylsulphonates.

[Price 33p]

- f) A substance giving taste and aroma such as an aromatic oil (mint, aniseed etc) and a colourant and/or an optical brightening agent.
- g) An antiseptic agent such as those mentioned above, for example sodium acetarsol.
- h) A preserving agent, for example an alkali benzoate or an ester of p-hydroxy benzoic acid.
- i) A whitening agent or a white-intensifier for the paste or cream such as titanium oxide which has the effect of improving the brilliance of the teeth so treated.
- k) Water in a de-ionised state for serving as a carrier.
- 15 The total quantity of the ingredients designed to improve the taste of the above-mentioned compositions, i.e. sodium chloride and salts of saccharinic and glycyrrhizinic acids can vary between great limits and is a function of the proportions of agents such as the antiseptic, the preserving agent and the surface active agent. The quantity however generally lies between 0.05 and 0.50 parts for 100 parts (by weight) of the formula of the toothpaste. The respective proportions of each of the ingredients can be, by weight:
- sodium chloride: 0.01% to 0.15%  
alkaline saccharinate: 0.005% to 0.05%  
alkaline glycyrrhizinate: 0.035% to 0.30%
- 30 The preparation of the compositions according to the invention takes place by making a gel by adding gelling-thickeners into an aqueous solution of the active soluble constituents, dispersing in this gel the agent giving an oily content, such as glycerine, as well as the non-soluble constituent powders and finally introducing the surface active agent into the mixture with a slight stirring motion in order to avoid the formation of foam, after which, the composition is mixed under vacuum until the paste or cream obtained is of the desired viscosity.
- 40 The example which follows illustrates in a non-limitative manner the production of a tooth-paste according to the invention.
- 45
- Example:  
The following composition has been made by the above-mentioned method:
- |  |         |    |
|--|---------|----|
| 50 sodium monofluorophosphate  | 0.76 g  |    |
| sodium acetarsol   | 0.56 g  |    |
| colloidal silica   | 1.30 g  |    |
| dicalcium phosphate stabilised by $MgHPO_4 \cdot 3H_2O$ and $Na_4P_2O_7$ | 42.50 g |    |
| titanium oxide   | 0.50 g  |    |
| sodium carboxymethylcellulose  | 1.20 g  | 55 |
| aromatic substance   | 0.80 g  |    |
| petroleum jelly  | 0.50 g  |    |
| sodium laurylsulphate  | 1.50 g  |    |
| sodium methyl-p-Hydroxybenzoate  | 0.15 g  |    |
| official glycerine   | 15 g    | 60 |
| de-ionised water   | 35.06 g |    |
- The formula also contained the following ingredients in order to remove any bitterness from the mixture:
- |  |        |    |
|--|--------|----|
| ammonium glycyrrhizate (for example the product "glycamil", (registered trade mark)) | 0.10 g | 65 |
| sodium chloride  | 0.06 g |    |
| sodium saccharinate  | 0.01 g |    |
| total  | 100 g  | 70 |
- While a composition of the same formula as above but without the addition preventing bitterness according to the invention gives a slightly bitter after-taste, the paste obtained by the supplementary addition of the three ingredients mentioned above has a pleasant taste only allowing the taste of the aromatic substance to come through.
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- WHAT WE CLAIM IS:—
1. An aqueous dentifrice, comprising a fluoride or alkaline fluorophosphate anti-carries agent, an abrasive agent chosen from metallic oxides and alkaline earth metal phosphates, and a mixture of sodium chloride and water-soluble alkaline salts of saccharinic and glycyrrhizic acids.
2. A dentifrice according to claim 1, in which the respective proportions of the constituents of said mixture are between the following limits in parts by weight relative to 100 parts of the total composition:
- |                        |               |    |
|------------------------|---------------|----|
| sodium chloride:       | 0.01 to 0.15  | 80 |
| alkaline saccharinate: | 0.005 to 0.05 |    |
| alkaline glycyrrhizate | 0.035 to 0.30 |    |
3. A dentifrice according to claim 1 or 2, which comprises, for 100 parts (p) by weight of the total composition: 0.76 p. of sodium monofluorophosphate; 1.30 p. of colloidal silica; 42.50 p. of stabilised dicalcium phosphate; 0.50 p. of titanium oxide; 1.20 p. of carboxymethyl cellulose; 0.80 p. of aromatic substance; 0.50 p. of petroleum jelly; 1.50 p. of sodium laurylsulphate; 0.15 p. of sodium methyl - p - hydroxy benzoate; 15 p. of glycerine; 0.10 p. of ammonium glycyrrhizate;
- 100
- 105

0.06 p. of sodium chloride; 0.01 p. of sodium  
saccharinate; 0.56 p. of sodium acetarsol; q.s.p.  
for 100 p. of de-ionised water.

4. A composition according to claim 1, sub-  
5 stantially as hereinbefore described.

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